Migration for Enhancing Community Resilience?

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Abstract

Climate change adaptation is widely promoted as community-based intervention. Within a community, mainstream donor and government policies tend to focus on sedentary farmer groups to benefit from the intervention. Little is known about the relationship between mobile farmers' experiences of adaptation and the community-based intervention goals. Using interview data derived from mobile farmers in northern Ghana, we argue that the ongoing interventions fail to leverage on knowledge of farmers' migration experiences that enable them to engage in innovative practices of climate change adaptation. Creating opportunities for the mobile farmers to systematically communicate their knowledge on adaptation with others offers new approaches, which complement the existing place-based territorial and landscape approaches. We conclude by outlining how to more robustly incorporate individual life trajectories and communication between different farmer groups into the community-based interventions.

Introduction

Climate change adaptation is widely promoted as community-based intervention. For example, community resilience concept has gained much currency among scholars and activists to analyse "the capacity of a social system to come together to work toward a communal objective" (Berkes and Ross 2013: 6, see also Magis 2010). The concept is now applied to debates on and practice of climate change adaptation in different policy and geographical contexts, justifying the popularisation of the community-based adaptation intervention (Cutter et al. 2008; Davidson 2010, 2013; Ross and Berkes 2014; Wilson 2013).

In Ghana in West Africa, research and practice to enhance community resilience to climate change have been actively promoted since the 2000s. Small farmers in the country's semi-arid northern regions (Northern, Upper West and Upper East regions) have been known to be vulnerable to unpredictable droughts and floods exacerbated by climate change. While defining the areas of applying such resilience strategies in relation to existing institutional and administrative boundaries remains contentious (Folke et al. 2007), the farmers' place-based communities, which are usually governed by systems of chieftaincy, are the common bases for interventions aiming to enhance resilience (Perez et al. 2015; Sova et al. 2014; Otsuki and Jasaw 2017).

In practice, this means that community-based interventions take forms of community dams; or introduction of new farming techniques and crop varieties into sedentary communities (United Nations Development Programme 2010). Here, a community is conceptualized as a place-based social system that has a capacity for self-organization in the midst of constant changes as well as to accept the proposed community-based resilience strategies. Consequently, a resilient community with an enhanced capacity for adaptation tends to imply an area where community-based organizations, such as farmers' groups, associations, and cooperatives, exist, or in short, where social capital is accumulated in one

place (Aldrich 2012; Cutter et al. 2008; Magis 2010).

In northern Ghana, community organizations exist in various forms, including chieftaincy-based village councils, kinship-based neighbourhood groups, youth groups or women's groups motivated by state or NGO-led community development assistance, political party branches, and churches and mosques. These organizations engage in different adaptation activities to some extent as seen generally in Africa (e.g. Rodima-Taylor 2012). The mainstream donor and government policies build on the existing organizations to shape farmer groups to benefit from the community-based interventions.

However, the interventions often overlook the experiences of mobile farmers who seasonally migrate to other areas and innovate their adaptation practices when they return. As Bruijn et al. (2001) points out, the mobile populations in Africa nurture their knowledge and experiences by exercising individual agency, leading to shape new individual and potentially collective actions. Yet, the relationship between individual agency and community resilience has been little explored. Consequently, it remains unclear how a community comes to acquire the collective capacity to organize the individual members in the first place, especially when it faces the need to deal with environmental changes.

In this chapter, we aim to outline potential process by which mobility can be analytically linked to a community's capacity to self-organize and to work toward a communal objective of enhancing resilience. In what follows, we review a body of literature on the relationship between mobility and community resilience to clarify what our focus on mobile farmers' experiences seeks to address. The review is followed by our methodology and three life histories of mobile farmers who had gained innovative ways of farming through migration. In conclusion, we refer to landscape approaches to community-based interventions that pay attention to multiple livelihoods associated with the same ecological contexts. We discuss the importance of incorporating individual life trajectories and aspects of time into the

territorial and landscape approaches. In practice, the incorporation requires periodical facilitation of communication and cooperation between mobile farmers and others in the same territory.

Mobility and resilience

Mobility and its relationship with the community can be explored through looking into how the concept of human agency is positioned in the resilience debates in general (e.g. Cote and Nightingale 2012; Davidson 2010). According to Berkes and Ross (2013) and Davidson (2013), the resilience thinking is largely a system and place-based thinking, and it has long neglected the concept of agency, which is the primary driver of mobility beyond places. To explore the relationship between individual agency and resilience enhancement requires us to pay attention to the sequence of time and the effects of individual aspirations (Davidson 2010, 2012). The sequence clarifies how individuals' life trajectories (including migratory trajectories) give order to a structure such as a community or ecological system, thus determining the extent of community resilience (Long and van der Ploeg 1995). In other words, workings of individual agency creates dynamics and diversity that exist within and beyond the place-based community boundaries.

The current, place-based approach to the analysis of community resilience does not properly address the individual dynamics because of its heavy reliance on institutionalism. Institutionalism assumes that a community has an institutional framework of its own and is able to manage the natural environment under various circumstances (e.g. Folke et al. 2007; Ostrom 2005). With its inherent capacity for institutional arrangements, a community is supposedly capable of collectively creating new institutions to shape a communal objective when it faces change or planned intervention at a community level (Magis 2010; Haller et al. 2015). For example, when heterogeneous groups claim multiple uses of and livelihood

accesses to a particular landscape such as a forest, the community should be able to set up its own rules (Poteete and Ostrom 2004; see the 'landscape approach' in the Introduction of this book).

If we pay attention to the individual agency, we would further interrogate this institutionalism by asking how environmental changes seriously affect mobility of the community members and transform the very foundation on which the community is institutionally bound. Berkes and Ross (2013) address this question by integrating the discussion of the place-based and structure-oriented resilience thinking into a psychological understanding of individual agency (see also Brown and Westaway 2011). Here, analytical gaps have been identified between how the resilience of individuals is enhanced and how their independent actions contribute to the enhancement of collective capacity for adaptation and well-being. Building on this discussion, we will further explore the potential process by which individual aspirations and experiences are nurtured, interpreted and used for enhancing community resilience.

Interpretation of mobility

Conventionally, the focus on place-based community resilience tends to portray mobility as forced displacement. Even if it is the result of a voluntary migration, it implies that the communities' low resilience pushes the members out to migrate (as scholarship on climate or environmental refugees indicate, see Black et al. 2011; Tacoli 2009). Underlining assumption is that the community resilience should be enabled by proper interventions that will fix people on the land so that they do not need to migrate.

On the other hand, it has been recognized that mobility creates new networks through which innovative household livelihood opportunities emerge if not only remittances (Bruijn et al. 2001; Olwig and Gough 2013). In particular, seasonal migration is seen by locals

especially in the arid or semi-arid regions of the world such as northern Ghana to be a desirable income diversification strategy (Van der Geest 2010). In other words, migration, even if people had been forced to migrate, is a way for many poor farmers to acquire new knowledge and experience that can be useful for adaptation at individual and household levels (Otsuki et al. 2014). However, what this implies for community resilience as well as the existing community-based interventions remains unknown (Otsuki et al. 2017).

Here, we propose to simply interpret mobility as an individual agency that enables a person to move. The implications of the mobility then depends on how the person on the move or after the move identifies its meanings. Following Archer (2007), individuals can become aware of the meanings of mobility by reflecting on their actions and experiences. In the context of climate change, individuals usually "cannot know everything that is going on" in order to make rational decisions to adapt to the changes (Archer 2007, p. 24). Therefore, they anyway have to reflect on past experiences, make temporal decisions, and take independent actions depending on their exposure to information and knowledge (Davidson 2012). In places where climate changes are physically felt daily, for example, in the form of changing rainfall patterns in northern Ghana, individuals continually, but often tacitly, go through the process of adaptive actions such as migration and reflections on these actions. The results are that they regularly move out of their communities and return with new ideas to deal with the changed climate.

The question at this point is how farmers can share their reflections and ideas with others within and between communities so that the individual agency can be linked to the collective agency to enhance community resilience. In other words, how can the collective learning from the individual migration experiences be promoted (Brown and Westaway 2011; Krasny et al. 2010)?

Individual migration experiences and collective learning

Collective deliberations based on individual reflections become possible when individuals frame their problems through reflections, communicate with others, and jointly align individual framings. This alignment is considered to lead to enhanced community resilience (e.g. Smith et al. 2016). Following the classic pedagogy of Freire (2003[1970]), the facilitation of action and reflection enriches the language for individuals to clarify how individual coping and adaptive actions contribute to larger societal, ecological, and political contexts (see also Wilson 2013). Thus, if individuals are encouraged to verbalize and share their reflections within a group, communication will eventually follow and lead to what Goldstein (2012) terms "collaborative resilience" (cited in Ross and Berkes 2014, p. 796).

In the literature on capacity building, this process has been discussed as personal transformation, that is, "the transformation of an object-person into a subject-person in the process of development" and into a citizen who is aware of their right to demand interventions in existing policy frameworks (Max-Neef 1992, p. 198). The logical framework for facilitating reflexivity therefore involves nurturing of political agency, which ensures individuals to become capable of linking their personal experiences and the wider context of potential adaptive governance at different levels (cf. Davidson 2012).

However, actual community-based adaptation interventions are usually unable to actively anticipate the emergence of political agency, which is often considered to be an element of system destabilization (Grove 2014). For example, the current framework recognizes local and individual perceptions about weather patterns and crop failures (Crona et al. 2013), but these perceptions are used to validate ecological and scientific adaptation findings rather than to open new pathways to facilitate collective deliberations (Cote and Nightingale 2012). In addition, as interventions must assume a planned timeframe, dialectic and iterative processes of action, reflection, communication, and deliberation are too time-

consuming for the intervening development actors.

After all, adaptation, especially through mobility, is an open-ended action that creates various unintended consequences, some of which may even temporarily seem incompatible with the community and place-based resilience enhancement goals. At the same time, this open-endedness is exactly how new knowledge and collective learning are generated, as small adjustments take place in citizens' everyday lives (Princen 2010; Turner and Berkes 2006). In other words, the capacity for individual community members to adapt to changes and enhance resilience collectively is what allows individuals to "overtake the destinations that are thrown up in its course" (Ingold 2011, p. 4), make small adjustments, and discuss the adjustments with others, including experts and policy-makers. The framework used by experts and policy-makers should facilitate this process by creating appropriate structures that eventually enable the individuals to self-organize through joint deliberations (Princen 2010).

At present, individual farmers in northern Ghana are actively reflecting on their migration experiences and adaptive actions. They are communicating their reflections with others in the neighbourhood and with researchers like us, but they seldom have the opportunity to go through personal transformation in order to nurture the political agency to demand the needs for wider communication of their knowledge with others. This lack of communication does not lead to collaborative resilience at the community level. We thus need to find out how to create opportunities for further communications on migration experiences in communities affected by climate changes.

Methodology

To trace the mobility effects and communication possibilities requires us to use the biographical life history approach, classically defined as "the studied use and collection of life documents that describe turning point moments in an individual's life" (Denzin 1989, quoted

in Creswell 1998, p. 47). This is used in a wide range of social science and humanity disciplines including psychology, while it is not commonly seen in the social-ecological system studies. However, to integrate individual agency and place-based community resilience enhancement entails reconstruction of stories of the persons who take adaptive actions and reflect on them (cf. Kapferer 2006).

The three small farmers' stories are presented below. The farmers have been identified in survey activities conducted between 2011 and 2015 as a part of socioeconomic studies for a larger international research project entitled: Enhancing Resilience to Climate and Ecosystem Changes in Semi-Arid Africa (CECAR-Africa). The entire research activities included household surveys, field visits and in-depth interviews in two districts: Tolon district in the Northern region whose population is dominantly Dagomba; and Wa West district in the Upper West region where a mixture of Waala, Dagaaba and other ethnic groups are found. Drought conditions experienced in these districts are extremely harsh, and in Wa West, the presence of the Black Volta River triggers easy flooding of farmlands during the rainy season, severely affecting farmers' crop productions. In total, ten vulnerable farming communities (six in Tolon and four in Wa West) participated in detailed survey and interview activities focused on community organizations, land use practices, and livelihood strategies (Antwi et al. 2014).

One of the research components was a detailed survey of 120 farmers in rural communities and 60 consumers in urban areas which aimed to contribute to an understanding of the crop value-chains that exist in the region. An earlier baseline survey in 2012 showed that almost every household cultivated a small plot of vegetables, including pepper and okra for household consumption, in addition to major staple crops of maize and yam. A subsequent crop value-chain study identified that post-harvest handling, knowledge and practices are key challenges when farmers wish to commercialize these vegetables to diversify their income sources. There was a consensus amongst community members during focus group discussions

that chili pepper and okra were high profit crops, and they identified those who commercialized these crops as successful farmers.

During the survey we encountered the previously described successful farmers who, with no substantial livelihood assets originally nor with direct lineage to chieftaincy, were not only better off due to the commercialization of their farm produce, but were more adaptive to constant changes than others in their community. This was more apparent in Wa West, the poorest district in the northern part of Ghana where migration is typically interpreted as the result of poverty and low community resilience. Thus, we began to ask: What kind of capacity did these farmers have that enabled them to farm differently? What constrains others in the community from learning from them?

In March 2015, we re-visited and conducted in-depth interviews with those who seemed to be more adaptive farmers in Wa West. They were indeed mobile farmers who had learned to innovate their farming practices by reflecting on their migration experiences. We summarize their life histories to specify the relationship between mobility, individual innovation, and a lack of communication opportunities for the collective learning.

Individual adaptation through migration

Communities in the district of Wa West have been chronically suffering from an unpredictable rainfall pattern, which, together with low soil fertility and land property fragmentation, poses a threat to agriculture (Kusakari et al. 2014; Otsuki and Jasaw 2017). The existing adaptation interventions tell farmers to adopt modern agricultural techniques such as to plant their crops in lines, apply chemical fertilizer, and use early maturing crops to overcome vulnerability. Many farmers who traditionally depended on maize and yam as staple crops now plant a large quantity of rice, but they need combine harvesters, and the recommended dosage of fertilizer for rice is expensive, even if the farmers utilize loan and rural credit schemes. Thus, farmers

are exploring ways to diversify their products. The diversification is apparently the primary adaptive action in the area.

This diversification is closely related to recent community-based adaptation interventions promoting community dams and dry season farming into the communities in Wa West. Three farmers introduced below have benefitted from these interventions while developing their own ways of doing things. Their reflections enable us to identify specific knowledge and practice of diversification rooted in their migration experiences in the southern plantation areas in Brong Ahafo.[1]

Joe: the okra farmer

Joe from the Tagdo community in Wa West has greatly diversified his crops over the years. He is from the Dagaaba tribe and previously migrated to the Brong Ahafo for work as a seasonal labourer on a cacao plantation. He is one of the typical Dagaaba youth who took advantage of "the opening up of a road across the Black Volta…[river]" to work on the large-scale farms established there during the 1970s (Amanor and Pabi 2007, p. 57).

According to Joe,[2] in the end of the 1990s, weather patterns started to become increasingly unpredictable, and farming staple crops such as maize and yam did not sustain his family. His older brother had travelled to work on a cacao plantation in Brong Ahafo as an agricultural labourer and eventually rented a land to plant tomato. As the brother stabilized his income, Joe moved with his parents to Brong Ahafo to join in the tomato farming.

In 2004, Joe's parents decided to go back to Wa West. Joe had met his wife in Brong Ahafo who was also from Wa, and they came back together. He worked on his father's six-acre farm to plant staple crops such as maize, rice, sorghum, and yam. At the same time, he started to cultivate one acre of his own farm called "garden". In the garden, he planted cash crops such as okra and green pepper, and occasionally cucumber, eggplant, and watermelon.

He also planted fruit tree seedlings and experimented with beekeeping and oil palms.

Joe owns a simple water pump for irrigating the garden and therefore actively conducts dry season farming. In fact, other dry season farmers usually plant tomatoes or cabbage as they also learn from the migration experiences in Brong Ahafo. Joe himself first tried tomato, but disease killed the crop. The market for tomatoes was also saturated, as everyone started to engage in tomato farming in the mid-2000s. Therefore, he looked for a *niche* product, and started to specialize in commercializing okra.

The commercialization of okra in the region is considered to be very innovative because it is a typical woman crop, that is, the crop only grown by women for household consumption and only during the rainy season. Culturally, the male producers of okra (or other vegetables) are seen as lazy people; as one elder in the adjacent Baleufili community said in reference to Joe: "men should be working on crops that require hard labour – like making yam mounds!"[3] In another dominantly Dagaaba community called Bankpma near Tagdo people have also refused to commercialize okra because "one elder sold okra and died".[4] Consequently, they believe that animal sacrifice to pacify the gods is necessary in order to commercialize okra.

In spite of such cultural environment making the commercialization of okra in dry season a rare practice, Joe continued to expand his okra farm because especially during the dry season people had to purchase okra coming from outside the region at local markets, and Joe (or in fact his wife) was the only person selling it quite fresh. This okra business began to bring a weekly income to his household, and the profits were invested in animals, the corrals and the farm inputs. A small number of cattle was important as it produced dung to fertilize the soil, and they served as insurance when the crop failed.

If the rain is not sufficient, Joe is prepared to go back to Brong Ahafo and plant tomatoes again for plantation owners. But he also recognizes that dry season farming is the

key for young farmers to adapt to the rain scarcity in the north. According to his reflections, “people are reluctant to start because the investment they have to make to establish a garden”, including the costs of fertilizer and fuel for pumping water, is not negligible, especially when they do not own cattle. Indeed, people complain about a lack of money. According to Joe, farmers need to observe market to see what households buy at local markets during the dry season and then consider planting these crops. In Ghana, local markets open every day in different locations, so Joe himself goes around different markets to obtain information on farming and weather from others. He contends that there should be a systemic way to cooperate on market information among the farmers to share experiences and scale up the niche productions.

Recently, Joe planted mangoes and cashews, not only because the sale of the fruit could be lucrative but because the trees are said to bring rain. His trials in producing and commercializing cash crops such as okra have led him to reflect on weather conditions more carefully and to link this reflection to the actual practice of planting trees. However, Joe’s adaptations and reflections are not taken beyond his garden; even if he exchanges information with other farmers at local markets Joe himself thinks that formal education is necessary to be able to pass advice to others. He has four children and is eager for them to be well-educated so that at least one of them “can come back and help with more knowledge on farming”. Cash income from dry season farming is important in carrying out this family goal of education.

Joe’s case shows that mobility and innovation are closely linked, leading to adaptive actions, but his experience seems to be rather unique because of existing cultural and material constraints and a lack of systemic support for others to collectively learn from existing adaptive actions. Kwachi, who lives in the Baleufili community adjacent to Joe’s location, is known for his green pepper plantation. His reflections show a trajectory similar to Joe’s, but his adaptive actions rather focus on specializing one product with clear intention to

individually overcome competitions.

Kwachi: the green pepper farmer

Kwachi went to Brong Ahafo in 2004, initially as a farm labourer raising yam mounds. After his one-year contract expired, he was recruited as a labourer on a green pepper farm, mainly to transplant seedling every 25 days. Then, the owner started to send Kwachi to the city of Kumasi for commercialization of the peppers. When the harvest was not large enough and he did not go to Kumasi, people from Kumasi procured peppers directly from the farm. This observation led Kwachi to conclude that green pepper was a special product in high demand. Although Kwachi's initial contract at the pepper farm was for two months, he ended up staying at the farm for one year.

Kwachi came back to Baleufili at the end of 2006.[5] In 2007, he immediately started to transplant pepper seedlings on his own farm. A trader bought three peppers for 20 *pesewas* [approx. $0.05] and sold one fruit for 20 *pesewas* in the local market. So he decided to directly sell his peppers at 20 *pesewas* at the local market. The first farming season fetched 1300 *cedis* [$325], which was a large sum for small holders in the region. The year 2009 was the best year so far for him, as the harvest generated 4000 *cedis* [$1000]. He won the district's agricultural competition in the same year, was awarded as the best pepper farmer in Wa West.

The year after, the harvest dropped to 500 *cedis* [$125] because the plants were attacked by disease. Today, three peppers can be sold for one *cedi*; or five peppers for one *cedi*. The market fluctuates a lot because peppers sometimes flow into local markets from southern regions and increase the existing competition. The green pepper plantation also requires intensive watering and frequent fertilization during the transplantation phase. Nevertheless, Kwachi believes that green peppers are advantageous for dry season farming since the maturing time is shorter than for other vegetables such as tomatoes.

Kwachi primarily overcomes the competition risk by combining the pepper plantation with managing six cattle. He has six cattle, and he explains that with profits from the pepper plantation he buys a head of cattle, but when the pepper price is low he must sell the cattle to make money for inputs and for his son's education. Therefore, his herd size has remained at six. But this cycle of investing the profit from dry season farming into cattle and vice versa is important, as he is never totally out of money. In other words, the owning of cattle helps to mitigate the risks of the green pepper plantation.

Unlike Joe, Kwachi has no intention of going back to Brong Ahafo even if the rain becomes scarce, as he thinks he should be able to learn from others with similar migration experiences, such as Joe. Meanwhile, the weakness of communication between farmers makes him think that his children should not follow into his profession since they cannot learn new knowledge unless they become farm labourers in the south. With the money he obtains from the pepper and cattle trade he sends his eldest son to university in Cape Coast, wanting him to acquire knowledge without having to become a labourer. Like Joe, if any of his children engage in farming, Kwachi emphasizes that "they should modernize the farming" based on knowledge they gain in formal education in order to increase the yield of staple crops and mitigate the risks of cash crops.

The innovative combination of the risky cash cropping and livestock or other sources of income is not limited to the men's world. Adisa in the same community as Kwachi's has developed a cycle of reinvestment from her shea butter production.

Adisa: the shea butter producer

Adisa is a woman of 25 years old, and she is one of the women in Wa West who have experience working in the Brong Ahafo region with their husbands or parents. In general, women who migrated also engage in their own work, mostly as porters at local markets or

cooks at chop bars. As they interact with other women from different locations, they also learn how to make new dishes that can potentially be sold at markets in the north, or how to make new clothing and hair styles.

In case of Adisa, she worked with her father on a cashew plantation for two years. The plantation also produced vegetables and staple food crops alongside the cashew trees, and she learned to farm there. About five years ago, she returned to Baleufili community. Upon returning, she started to engage in the traditional women's work in the region, that is, shea butter processing together with her mother who had been collecting and processing shea nuts since her childhood.

The shea butter is the major source of income for female farmers in northern Ghana, and it is considered to be one of the crops with the potential to enhance the resilience of women as a collective (Jasaw, Saito and Takeuchi 2015). Yet, the market in the region is limited, and few grinding mills are available for cracking the hard shells of shea nuts. Nonetheless, Adisa kept on going to a nearby market to retail her shea butter despite in a small scale.

According to Adisa,[6] her business started to flourish after she met a buyer from the reginal capital city of Wa who bought all her stock. Adisa offered to always travel to Wa to supply the buyer with shea butter. As she found the buyer, she and her mother increased their collection of shea nuts and processed more butter. In 2012, she bought a tricycle to help cart shea fruit for further processing into butter. With the means of transport, she also started to take the kernel to Wa for grinding.

As her production of the butter started to get systematized, Adisa and her mother also remembered to use the pulp of shea fruit for manuring their farms. They had learned this when they worked on the cashew plantation in Brong Ahafo. In the early morning, Adisa, her mother and sisters would go to the file, de-pulp the shea fruit, and bury the pulp to decompose

on the farm. They would then spread the organic material on their father's maize field and carry some to the women's pepper and okra garden by the community dam site.

The shea season is relatively short, a few months during the rainy season (June to August). However, because of this manuring, Adisa can turn to selling vegetables from her garden till December. When dry season becomes severe (usually January to April), she buys rice from rice farmers in surrounding communities to parboil and sell off in Wa. This cycle keeps her and her family relatively better-off till the next shea season.

The experience of Adisa illustrates a clear case of innovation based on skills acquired from the migration experience. Like Joe, she was able to identify her niche in the local market, but took steps to relate the shea waste as the organic fertilizer, improving her vegetable production and commercialization. The revenue is re-invested in processing and commercializing rice, completing a cycle of income generation all year round.

Other women do engage in the similar trade of shea butter, vegetable production and rice processing, but they express that their main constraint is finding working capital to continue financing their trade. What makes Adisa unique is that she successfully combines her trade with innovative farming. Her use of organic manure to reduce the input cost is important since women do not own cattle and thus are unable to fully use the cattle dung as manure. Once the cycle of investment in profitable trades is established, the problem of the working capital disappears.

In fact, women communicate with each other more frequently than men since parts of their activities including production of shea butter, beer or rice processing and the commercialization of products in local markets are often done collectively. However, their collective activities revolve around mutual help, which is not effectively linked to the community-wide agenda of improving, for example, currently fully manual shea butter or organic manure production and lobbying for trade financing infrastructures. This limitation

stems from the fact that women are largely excluded from community-wide decision making processes in these areas.

Migration experiences in the community context

The three farmers have obtained the knowledge on differentiating from others in their communities the crop choice – okra, green pepper and shea butter – and manure use in combination with the crop through their migration experiences. The processes of obtaining this knowledge vary but, once acquired, the knowledge leads to shape a course of adaptive actions by opening a new space for the farmers to keep on experimenting their new crops and manure use. The problem is that this space of experimentation seems to be possible rather as an exclusive space than as a space for cooperation in which new collective action can be taken.

For example, Joe or Kwachi will gladly share their knowledge on okra or pepper farming or the use of water pumps with others in their communities. However, because of the lack of cooperative structures, the market will force the farmers to compete with each other. Under this circumstance, when larger producers participate from the south, such as in the case of green pepper, farmers in Wa West will not benefit from the innovation.

In addition, as Otsuki and Jasaw (2017) argues, land fragmentation due to the natural population increase and a lack of new spaces to establish farmland is exacerbating the effects of climate change in the region. The fragmentation will eventually force the producers to compete for resources unless there are ways to intensify the land use in cooperative manners. The mobile farmers have been diversifying their production while trying to use their land sustainably so that they do not have to compete with each other or migrate again. However, diversification within the limited land space is still undermined at the community level.

In other words, while migration experiences lead to individual adaptive actions and innovative practices, they do not immediately get diffused or communicated with others

within communities. This means that community-based interventions should try to follow up the introduction of dams and new crops in order to facilitate learning opportunities among mobile and sedentary farmers in and between neighbouring communities. In particular, the interventions should build on the ongoing diversification processes and the production and commercialization cycles for different products so that the farmers have more chances to become resilient in cooperative manners.

More specifically, the interventions can link migration experiences and community resilience in the following manners:

- The interventions can popularize the use of organic manure in combination of residues and cattle.
- Cash cropping though dry season farming can benefit from more cooperative structures so that farmers can learn from each other's knowledge and observations of local markets.
- The decision-making processes in a community can be supported through creation of a platform where various voices such as of women to express their individual experiences and aspirations.

Such a platform should be used as a deliberative space where farmers share their reflections and become aware of their political agency to negotiate their needs to improve the staple cropping, cash cropping and decision making. For this to happen, farmers themselves must be able to appreciate their own experiences with migration and the ongoing community-based adaptation interventions (Otsuki et al. 2017). Currently, as Joe and Kwachi imply, the lack of formal education leads to undermine the farmers' own knowledge and experiences of adaptation. Describing individual migration experiences in relation to the community-based

interventions is the first step to ensure this appreciation.

Conclusions

Every individual is capable of agency to confront involuntary situations and effectively adapt to changes. In northern Ghana, small farmers who are heavily affected by environmental changes and a lack of adequate interventions are exercising their agency daily, not only in their original community but also by migrating to fertile grounds, diversifying their products, and commercializing new products. The community-based adaptation interventions in forms of the place-based water management and dry season farming fail to leverage on the individual migration experiences that tacitly shape innovative adaptation practices and thus potentially lead to the community resilience enhancement. The failure primarily stems from the lack of opportunities for the farmers to exchange their reflections and knowledge to nurture collective learning at the community level.

Based on reflections on the migration experiences made by three farmers, we can further specify how to link the mobility and community resilience in theory and in practice. First, migration is one of the most important adaptive actions, and its implications, especially for place-based community resilience, must be thoroughly understood. In the dry season, most communities in northern Ghana have more household members outside of the region than within the region, and this generates remittances as well as new knowledge and relationships with different localities. Place-based community resilience is ambivalent as to how to interpret the outcome of migration since mobility can be considered as an outcome of low resilience. Here, we suggest that the knowledge of mobile farmers should be conceptualized as a resource that facilitates community resilience if the proper opportunities are created for these farmers to share the knowledge.

The appreciation of the mobile farmers' migration experiences for community

resilience enhancement also helps us to critically evaluate the increasingly popularized territorial and landscape approaches. These approaches emphasize the importance of paying attention to heterogeneity of resource uses that take place in the same ecological context. While the spatial diversity is duly recognized, they are static in temporal terms since they do not clarify trajectories of how this heterogeneity comes about. We argue here that the migration experiences shape innovative resource uses and influence territorial boundaries and landscapes. Therefore, more solid attention must be paid to the process of how the place-based resilience is characterized at a particular point in time instead of taking the characteristics of the place as a landscape for granted.

Second, collective learning must be mobilized in such a way as to catalyse different voices emerging from mobile farmers including women. In order to create opportunities for this mobilization, farmers themselves must be aware of their own potential to contribute to community resilience. To this end, they should be periodically given opportunities to reflect on their experiences in systemic manners and to nurture their political agency by which they obtain information, share reflections, and come up with a collective agenda. As Ross and Berkes (2014) recommends, participatory (action) research and long-term observation constitute a vital methodology to facilitate reflection and identify moments to connect the farmers' awareness and the community-based interventions.

Lastly, community resilience requires a combination of different innovative practices such as staple cropping, cash cropping, and livestock and residue uses, as well as commercialization of the niche products. The community-based interventions can more robustly look for adaptive combination patterns by extrapolating necessary conditions that enable these patterns. Collecting information on how mobile farmers have been experimenting with their production and commercialization is the first step required for identifying such conditions.

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[1] A different version of these three farmers' case studies appear on Otsuki, Jasaw and Lolig (2017).

[2] Interview, Tagdo community, 21 March 2015. The local language was translated to English by local research assistants.

[3] Interview, Baleufili community, 21 March 2015.

[4] Interview, Bankpama community, 22 March 2015.

[5] Interview, Baleufili, 23 March 2015.

[6] Interview, Baleufili, 20 April 2015.